

Clinical Study on the Effect of Continuity of Care in CICU on Improving Cognitive Function and Psychological State in Patients with Heart Failure

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Abstract: *Objective:* To analyze the effect of continuity of care in the cardiac intensive care unit (CICU) on improving cognitive function and psychological state in patients with heart failure (HF). *Methods:* A total of 112 chronic HF patients admitted to the CICU of Xuzhou Traditional Chinese Medicine Hospital from July 2022 to August 2024 were selected and randomly divided into two groups using the red and blue ball method: a control group ($n = 56$) and a study group ($n = 56$). The control group received routine CICU nursing management, while the study group received routine CICU nursing combined with continuity of care management. Cognitive function (using the Montreal Cognitive Assessment, MoCA), psychological state (using the Self-Rating Depression Scale, SDS, and Self-Rating Anxiety Scale, SAS), and quality of life (using the Minnesota Living with Heart Failure Questionnaire, MLHFQ) were compared between the two groups. *Results:* After the intervention, the cognitive function scores of the study group were significantly higher than those of the control group ($P < 0.05$). The SDS and SAS scores of the study group were significantly lower than those of the control group after the intervention ($P < 0.05$). The quality of life in the study group was also significantly better than in the control group ($P < 0.05$). *Conclusion:* CICU continuity of care can effectively improve cognitive function and psychological state in patients with HF, while also enhancing their quality of life.

Keywords: CICU continuity of care; Heart failure patients; Cognitive function; Psychological state

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1. Introduction

Heart failure (HF), as a complex and progressive clinical syndrome, has a high prevalence and mortality rate^[1]. HF not only severely impairs patients' cardiac function but is also often accompanied by cognitive decline and changes in psychological states, such as anxiety and depression. These non-cardiac symptoms further reduce patients' quality of life and may accelerate the progression of HF^[2]. Traditional medical care models tend to focus on acute-phase treatment within the hospital but often lack adequate attention to continuity of care after

patient discharge. However, as a chronic disease, HF management needs to encompass the entire course of the disease, including acute-phase treatment in the hospital and long-term management outside of the hospital. Therefore, exploring effective continuity of care models to improve cognitive function and psychological state in HF patients holds significant clinical and social value.

The CICU is the primary treatment location for patients in the acute phase of HF, and the quality of nursing care and the nursing model directly affect patient prognosis. In recent years, continuity of care in CICU, as an emerging nursing model, has gradually gained clinical attention. This model emphasizes the continued provision of coordinated and continuous care after patients are discharged from the CICU, ensuring that they receive consistent and coherent nursing services during transitions between different care settings^[3]. Based on this background, this study aims to explore the clinical effect of continuity of care in CICU on improving cognitive function and psychological state in HF patients. By comparing differences in cognitive function, psychological state, and quality of life between patients receiving conventional CICU care and those receiving continuity of care, this study seeks to provide scientific evidence and practical guidance for comprehensive management and nursing of HF patients.

2. Materials and methods

2.1. General information

The sample selection period was from July 2022 to August 2024, and the source of the samples was patients with chronic heart failure (CHF) admitted to the CICU of Xuzhou Traditional Chinese Medicine Hospital. A total of 112 cases were collected and randomly assigned to two groups using the red and blue ball method: a control group (56 cases, receiving routine CICU nursing management) and a study group (56 cases, receiving routine CICU nursing combined with CICU continuity of care management). The control group consisted of 30 males and 26 females, with an age range of 45 to 80 years and an average age of (62.53 ± 10.31) years. Their disease duration ranged from 2 to 7 years, with an average of (4.87 ± 1.27) years. In terms of heart function classification, 27 cases were in Class III and 29 cases in Class IV. The study group consisted of 28 males and 28 females, with an age range of 42 to 82 years and an average age of (63.12 ± 11.21) years. Their disease duration ranged from 2 to 8 years, with an average of (4.79 ± 1.42) years. In terms of heart function classification, 25 cases were in Class III and 31 cases in Class IV. The baseline data of the two groups were similar, with no significant statistical differences ($P > 0.05$), making them comparable. This study protocol was rigorously reviewed and formally approved by the hospital's medical ethics committee.

2.2. Inclusion and exclusion criteria

Inclusion criteria: (1) Meeting the diagnostic criteria for chronic heart failure^[4]; (2) Heart function classification \geq Class III; (3) Patients voluntarily participating and signing the informed consent form.

Exclusion criteria: (1) Those with severe complications; (2) Those with a history of cognitive impairment; (3) Those who withdrew from the study midway.

2.3. Methods

The control group received routine CICU nursing management:

- (1) Following CICU department protocols to care for patients with chronic heart failure;

- (2) Continuously monitoring heart function changes in chronic heart failure patients;
- (3) Strictly following regulations to perform basic nursing tasks such as specimen collection and intravenous infusion;
- (4) Guiding patients with chronic heart failure in emotional regulation.

The study group received routine CICU nursing combined with CICU continuity of care:

- (1) Formation of a CICU continuity care team, composed of the head nurse, CICU specialist nurses, and department heads.
- (2) Condition monitoring: Closely monitor patients' vital signs, including heart rate, blood pressure, and respiration, as well as intake and output, to detect and address changes in the condition promptly. Patients were classified into different nursing levels based on clinical symptoms and heart function classification, with particular attention given to the most severe cases. Based on this classification, individualized care plans were developed.
- (3) Position management: Patients receiving CICU treatment generally have severe conditions requiring bed rest, restricted activity to reduce the cardiac load, and improved breathing difficulties. However, prolonged bed rest can lead to pressure sores, so nursing staff should regularly assist patients in changing positions ^[5].
- (4) Psychological management: CICU patients are prone to feelings of loneliness and negative emotions such as anxiety and depression. Daily conversations with patients are needed to encourage them. Communication with family members is also necessary to guide them on how to comfort the patients during visits. Health education should be provided to both patients and their families to enhance their understanding of chronic heart failure, reducing fear and anxiety. For patients with significant anxiety or depression, nursing staff should provide timely psychological counseling and administer sedatives to stabilize emotions.
- (5) Environment management: Maintain a quiet, clean, and comfortable ward environment with regular ventilation to avoid cross-infection. Patients' daily routines should be preserved.
- (6) Transition care: Once the condition of chronic heart failure patients stabilizes and the medical team confirms that they are ready to be transferred out of the CICU, arrangements are made for transfer to general wards for continued treatment and observation. CICU nursing staff should provide detailed handovers to the nursing team in the general ward, outlining the patient's condition and highlighting critical points of care to ensure seamless care. Additionally, staff should have in-depth discussions with patients and their families, emphasizing key points such as emotional regulation and the importance of a healthy diet.
- (7) Routine ward care: After patients are transferred to the general ward, the CICU care team should regularly assess the psychological state and disease progression of patients with chronic heart failure. By carefully reviewing medical records and test results, the stability of the patient's condition and any risks of deterioration should be determined. If abnormalities are detected, the attending physician should be notified immediately to ensure timely and effective treatment.
- (8) Discharge guidance and follow-up: Before discharge, a WeChat group should be established for the patient and their family members, where nursing staff can regularly share knowledge about the disease, provide recommendations for a healthy diet and exercise, offer correct medication guidance, explain

home care methods for common symptoms, and provide necessary psychological interventions and support. Any questions from the patient should be promptly addressed. Follow-up calls should be conducted in the first and third months after discharge to offer personalized rehabilitation guidance.

2.4. Observation indicators

- (1) Cognitive function: The Montreal Cognitive Assessment (MoCA) ^[6] was used to assess cognitive function. The total score is 30 points, with a score of < 26 indicating cognitive impairment (for those with high school education or lower, 1 point should be added).
- (2) Psychological state: Psychological state was evaluated using the Self-Rating Depression Scale (SDS) and the Self-Rating Anxiety Scale (SAS) ^[7]. SDS: The total score is 80 points, with 53 as the threshold; the higher the score, the more severe the depression. SAS: The total score is 80 points, with mild anxiety scored from 50 to 59 points, moderate anxiety from 60 to 69 points, and severe anxiety above 70 points.
- (3) Quality of life: The Minnesota Living with Heart Failure Questionnaire (MLHFQ) ^[8] was used to assess the quality of life in both groups. MLHFQ consists of 21 items, each scored on a 0–5 scale, where 0 represents the best and 5 the worst. The total score ranges from 0 to 105 points, with lower scores indicating a better quality of life.

2.5. Statistical analysis

This study used SPSS 20.0 statistical software to process the data. Measurement data for cognitive function, psychological state, and quality of life, which met a normal distribution, were expressed as mean ± standard deviation (SD) and analyzed using the *t*-test. A *P* value of < 0.05 was considered statistically significant.

3. Results

3.1. Comparison of cognitive function

As shown in **Table 1**, after the intervention, the cognitive function score in the study group was significantly higher than that in the control group (*P* < 0.05).

Table 1. Comparison of MoCA scores between the two groups (mean ± SD)

Group	Number of cases	Pre-intervention	Post-intervention
Study group	56	24.42 ± 0.37	27.98 ± 0.24*
Control group	56	24.46 ± 0.34	26.47 ± 0.27*
<i>t</i>	-	0.596	31.280
<i>P</i>	-	0.553	< 0.001

Note: Post-intervention compared with pre-intervention in the same group, **P* < 0.05.

3.2. Comparison of psychological state

As shown in **Table 2**, after the intervention, both the SDS and SAS scores in the study group were significantly lower than those in the control group (*P* < 0.05).

Table 2. Comparison of SDS and SAS scores between the two groups (mean ± SD)

Group	n	SDS score		SAS score	
		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Study group	56	55.64 ± 0.27	43.19 ± 0.27	53.97 ± 0.41	41.26 ± 0.36
Control group	56	55.71 ± 0.31	47.12 ± 0.21	53.92 ± 0.45	46.21 ± 0.16
<i>t</i>	-	1.274	85.979	0.615	94.027
<i>P</i>	-	0.205	< 0.001	0.540	< 0.001

Note: Post-intervention compared with pre-intervention in the same group, * $P < 0.05$.

3.3. Comparison of quality-of-life scores post-intervention

As shown in **Table 3**, after the intervention, the quality of life in the study group was significantly better than in the control group ($P < 0.05$).

Table 3. Comparison of quality-of-life scores between the two groups post-intervention (mean ± SD)

Group	Number of cases	Pre-intervention	Post-intervention
Study group	56	87.12 ± 4.76	44.29 ± 3.12
Control group	56	87.26 ± 4.69	61.26 ± 3.89
<i>t</i>	-	0.157	25.466
<i>P</i>	-	0.876	< 0.001

Note: Post-intervention compared with pre-intervention in the same group, * $P < 0.05$.

4. Discussion

Acute exacerbations of CHF often lead to symptoms such as shortness of breath and dizziness, negatively impacting the patient's cardiac function and quality of life. Traditional nursing care mainly focuses on specialized care during hospitalization, lacking continuity and coordination of care, which makes it difficult to meet the post-discharge care needs of patients. This, in turn, adversely affects their health and quality of life, increasing the risk of rehospitalization. Studies have shown that the application of CICU continuous care in elderly patients with chronic heart failure has a significant impact on improving cognitive function and psychological state^[9]. Therefore, this study implemented CICU continuous care for heart failure patients admitted to Xuzhou Traditional Chinese Medicine Hospital's CICU and analyzed its effect on patients' cognitive and psychological status.

This study found that in terms of cognitive function, the MoCA scores of the study group were significantly higher than those of the control group ($P < 0.05$), indicating that CICU continuous care can improve the cognitive function of heart failure patients. This is consistent with the findings of Sun and Hu^[10]. The reason for this improvement is that CICU continuous care emphasizes the formulation of personalized care plans and regular monitoring and assessment of the patient's condition, which helps to promptly identify and address factors that may affect cognitive function. Additionally, continuous care focuses on daily conversations with patients and the transmission of health knowledge, which also helps enhance patients' cognitive function.

Regarding psychological status, the SDS and SAS scores of the study group were significantly lower than

those of the control group, suggesting that the psychological management strategies in CCU continuous care have a significant positive effect on the psychological state of patients. The reason for this is that, in this study, daily conversations with patients, encouragement, communication with their families, and the transmission of health knowledge effectively alleviated the patients' feelings of loneliness, anxiety, and depression. Furthermore, through timely reassurance and the use of sedative medications, the emotional status of the patients was further stabilized.

In terms of quality of life, the study group also showed significantly better results than the control group. This suggests that the methods used in this study can effectively improve the patient's quality of life. The reason for this is that CICU's continuous care not only focuses on the patient's physical health but also emphasizes their mental health and lifestyle habits. Through environmental management, positioning management, and post-discharge guidance and follow-up, continuous care provides a comprehensive and continuous care environment, helping to improve patients' quality of life.

5. Conclusion

In summary, CCU continuous care can effectively improve the cognitive function and psychological state of heart failure patients, while also enhancing their quality of life.

Disclosure statement

The authors declare no conflict of interest.

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